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NOTES ON AND DESCRIPTIONS OF NORTH AMERICAN DIPTERA, . *C. F. Adams.*

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NOTES ON AND DESCRIPTIONS OF NORTH AMERICAN DIPTERA.

BY C. F. ADAMS.

IN presenting this paper I have, as usual, to thank Drs. F. H. Snow and S. W. Williston for kindnesses too numerous to mention. I take much pleasure, also, in acknowledging the loan of type material of Leptidæ by Prof. C. W. Johnson. To Profs. C. H. Fernald and R. K. Beattie thanks are due for material for study. To Prof. J. M. Aldrich I owe special thanks for references.

Anopheles pseudopunctipennis Theobald.

Specimens collected by Dr. F. H. Snow during August in Oak Creek canyon and along Bill Williams Fork, Arizona, agree with Theobald's description so far as it goes. The occiput is largely covered with upright black scales; there is a double median line of upright white scales which are replaced anteriorly between the eyes by long white hairs; the narrow occipital orbits are nearly bare, having a few long black hairs. The thorax has a double median white line on anterior part of mesonotum, extending a short distance backward. It appears to be a continuation of the similarly colored line of the head, but the scales are more cylindrical, *i. e.*, they are not broadened any at the apex. The remainder of the mesonotum and the scutellum are covered with light brown pile. If perfect specimens from the type locality should prove the head and thorax to be different from the above description, then the Arizona specimens will need another name.

Simulium notatum, n. sp.

Female: Yellow, with short yellow pile. Head yellow, covered with a thin grayish coat, mouth-parts and antennæ yellow, latter brownish on apical half, eyes black. Thorax, including scutellum and halteres, uniformly yellow. Abdomen yellow, dorsum with a row of four opaque, black spots; one specimen has the anterior part of the abdomen brownish, but this I believe to be due to desiccation. Legs yellow, last tarsal joint black, metatarsi with a row of short black spines on posterior margin, remaining joints with a few black, bristle-like hairs, tarsal claws simple. Wings hyaline, larger veins yellowish translucent. Length, 1.75 mm.

Two specimens; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow.

Mydas abdominalis, n. sp.

Male and female: Opaque black, abdomen except the first and last segments reddish yellow. Pile of face and front black, in some specimens intermixed with white ones, orbits of face and front grayish pollinose; antennæ slender, lamellæ truncate, sometimes with a dull reddish cast on inner side. Thorax opaque black, pile black, pleuræ with a very thin coat of gray pollen, halteres black. First abdominal segment, except narrow posterior border, opaque black, with black pile, the last segment in the female, and the hypopygium in the male, black, with black pile, in some specimens mixed with white, remainder of abdomen reddish yellow, both dorsally and ventrally, and with short yellowish pile. Legs black, hind femora with the usual spines beneath, the hind tibiæ with a strong apical spur, tip of latter and base of claws reddish. Wings uniformly dark brown, venation normal, posterior marginal cross-vein present. Length, 25–28 mm.

Congress Junction, Ariz. Collected by Dr. F. H. Snow.

XYLOPHAGUS.

TABLE TO THE SPECIES.

1. First joint of the antennæ much elongated.....*longicornis* Loew.
   First joint of antennæ of usual length..... 2
2. Legs in large part black .....*lugens* Loew.
   Legs in large part luteous..... 3
3. A yellow spot on each side near base of antennæ.....*reflectus* Walk.
   Destitute of such spot..... 4
4. Front entirely covered with grayish pollen..... 6
   Pollen of front reaching half-way, or more, from ocelli to antennæ..... 5
   Front shining, a narrow band of pollen near ocelli.....*rufipes* Loew.
5. Second, third, fourth and fifth segments of abdomen rufous, lateral margins black.....*abdominalis* Loew.
   Abdomen blackish throughout, shining.....*decorus* Will.
6. Tuft of white hairs on each side near base of antennæ.....*fasciatus* Walk.
   Destitute of such hairs 7
7. Thorax dorsum univittate (polished black line).....*triangularis* Say.
   Thorax bivittate (pollinose stripes).....*gracilis* Will.
   Thorax, except sides, pollinose throughout.....*persequs* Walk.
   Thorax shining throughout .....*nitidus*, n. sp.

Xylophagus nitidus, n. sp.

Female: Head black, occiput and cheeks shining, front and face covered with grayish pollen, antennæ dark, tip of second joint yellowish, that of the third joint black, first joint a little more than twice the length of second, third longer than the first and second together; proboscis yellow, palpi black; thorax shining, humeri, a narrow lateral line from humeri to base of wings, postalar callosities, pile and halteres yellowish, pleuræ with a very few pile; abdomen brownish black, shining, pile yellowish; coxæ and bases of femora light yellow, apical half of femore, four anterior tibiæ and tarsi brownish yellow, posterior tibæ, except each end, and their tarsi, dark brown; wings nearly hyaline, uniformly tinged with brown except on cross-veins, where it is darker. Length, 10 mm.

One specimen; Mt. Washington, New Hampshire. Geo. Dimmock.

CHRYSOPILA.

TABLE TO THE SPECIES.

1. Black or brown in general color 2
   Testaceous or light colored 26
2. Wings hyaline 3
   Wings hyaline, with an intense grayish tinge ..... *humilis* Loew.
   Wings wholly or in part fuscous or subfuscous 14
3. Thorax with golden yellow, yellowish or pale hairs on tomentum 5
   Thorax with black pile 4
4. Pile of abdomen yellow (Mexico) ..... *aterima* Will.
   Pile of abdomen black ..... *proxima* Walk.
5. Femora black or brown, at least at base 6
   Femora yellow, blackish sometimes at apex 9
6. Femora, except sometimes at extreme tip, wholly black 7
   Femora brown at base only 8
7. Pile of vertex black ..... *tomentosa* Bigot
   Pile of vertex yellow (female) ..... *proxima* Walk.
8. General color velvety black ..... *fasciata* Say.
   General color brownish black ..... *basilaris* Say.
9. Apex of each abdominal segment yellow 10
   Apex of all abdominal segments not yellow 11
   Abdomen uniformly golden yellow ..... *testacipes* Bigot.
10. The yellow of segments confined to ground color ..... *modesta* Loew.
    Yellow of segments confined to tomentum ..... *ornata* Say.
11. Posterior femora brown at apex, 4 mm., Jamaica ..... *jamaicensis* John.
    Posterior femora entirely yellow, larger species 12
12. First two abdominal segments largely yellow 13
    First two segments not yellow ..... *bella*, n. sp.
13. Mesonotum with three dull testaceous stripes ..... *basalis* Walk.
    Mesonotum uniformly covered with golden yellow tomentum, *invalida* Will.
14. Thorax blackish pilose 15
    Thorax golden yellow, yellow, or largely light pilose 19
15. Legs entirely black 16
    Legs not entirely black 17
16. Wings with two dark brown spots on costal margin (St. Vincent, West Indies) ..... *atra* Will.
    Wings without such spots ..... *anthracina* Will.
17. Hind border of each abdominal segment testaceous ..... *trifasciata* Walk.
    Hind border of each abdominal segment not testaceous 18
18. Second abdominal segment broadly silvery villose at base ..... *nigra* Bell.
    Second segment not so marked ..... *velutina* Loew.
19. Thorax golden yellow pilose or tomentose 20
    Thorax pale yellow pilose or tomentose 24
20. Wings infuscated near tip only, 5 mm. (Mexico) ..... *puella* Will.
    Wings otherwise infuscated 21

21. Wings uniformly subfuscous 22
Wings darkest along the veins ..... *thoracica* Say.
22. Pile of cheeks black (male), and white (female) ..... *lucifera*, n. sp.
Pile of cheeks yellow or golden yellow 23
23. Tibiæ brownish black (Mexico) ..... *mexicana* Bell.
Tibiæ yellow ..... *flavibarbis*, n. sp.
24. All veins distinctly clouded with brown, 8–12 mm. ..... *fœda* Loew.
A large subquadrate spot in center, and sometimes on base, of wing brown ..... *quadrata* Say.
Wings slightly infuscated at tip ..... *apicalis* v. d. Wulp.
Wings uniformly subfuscous ..... *propinqua* Walk.
Stigma and cross-veins only clouded 25
25. Thorax brownish, with an obsolete, dorsal stripe of a darker shade, 5–6 mm. ..... *griffithi* John.
Mesonotum opaque brown, with lateral margins and three median narrow stripes lighter colored, 7 mm. (Mexico) ..... *latifrons* Will.
26. Wholly yellow ..... *flavida* Bigot.
Not wholly yellow 27
27. Wings wholly or in part fuscous 28
Wings hyaline, apex grayish 30
28. Wings with central quadrate spot ..... *quadrata* Say.
Wings without such spot 29
29. Wings uniformly infuscated (Mexico) ..... *plebeia* Will.
Wings fuscous on distal part (Mexico) ..... *nana* Will.
30. Wings broad and rounded ..... *rotundipennis* Loew.
Wings not broad and rounded (West Indies) ..... *ludens* Loew.

I hesitate in offering the above table, for I realize its deficiencies. I have not seen all the species mentioned and had to to depend on the descriptions; therefore, it should be used as a guide for the study of the genus rather than an implement for the accurate placing of the species.

Chrysopila lucifera, n. sp.

Male: Head black; frontal triangle, face and cheeks gray pollinose; antennæ and palpi black, the latter long, subclavate, thickly black pilose; proboscis with brownish cast; pile of cheeks black. Thorax black, pollen dark gray on mesonotum, light on pleuræ; mesonotum with golden yellow tomentum, sparse pile dark brown; scutellum black, golden yellow tomentose; halteres black. Abdomen black, tomentum of dorsum golden yellow; pile white. Coxæ black, with black pile; femora blackish, tibiæ and base of tarsi yellow. Wings subfuscous; stigma slightly elongate; bend of anterior branch of third vein rectangular, sometimes furnished with a stump.

Female: Same as male except pile of cheeks and coxæ is white, palpi shorter and not so thickly pilose; front brownish gray pollinose, pile black, tomentum golden yellow. Femora somewhat lighter, and extreme tip of tibiæ fuscous. Length, 6–7 mm.

Three males from Washington and one female from California.

Chrysopila bella, n. sp.

Male: Head black; occiput, frontal triangle, face and cheeks dusted with bluish gray pollen; pile sparse and white; antennæ dark brown, the third joint lighter than the other two; proboscis yellowish, palpi brown, pile white; ocellar tubercle prominent. Thorax black; mesonotum with grayish brown pollen, that of the humeri and lateral margins gray, tomentum golden yellow; pleuræ light gray pollinose, with light-colored pile above front coxæ and behind and below base of wings; scutellum grayish brown, covered with golden yellow tomentum; metanotum light gray pollinose; halteres yellow, knobs brownish black. Abdomen black; first segment light gray pollinose, remaining segments, in certain lights, grayish brown pollinose, in others, opaque black, and in others still the segments appear to be the former color on the apex and the latter on the base; pile white, tomentum golden yellow. Coxæ blackish, apex with a yellowish cast; pollen light gray; femora and tibiæ light yellow; tarsi yellowish at base, black at apex. Wings hyaline, anterior branch of third vein without stump.

Female: Same as male except the antennæ and palpi are darker, the abdomen is uniformly gray pollinose; knobs of halteres yellow, trochanters are blackish, and bend of anterior branch of the third vein is rectangular and with a stump. Length, 5.75–6 mm.

Two male specimens from California and one female from Washington.

Chrysopila flavibarbis, n. sp.

Male and female: Head black, grayish pollinose, front of female brownish pollinose; pile of occiput, sides of face and of palpi yellow; antennæ black. Thorax black, gray pollinose; mesonotum, except front, lateral and hind margins in female velvety black; sparsely covered with yellow tomentum, and on sides having yellow pile; pleuræ bare; scutellum of a brownish

cast and with yellow pile; knobs of halteres blackish, base yellowish. Abdomen black, grayish brown pollinose, sparsely covered with yellow tomentum and pile. Coxæ black, yellowish pollinose, femora except tips piceous, with sparse tomentum, extreme tip of femora, tibiæ and basal half of metatarsi yellowish, remainder of tarsi fuscous. Wings subfuscous, stigma brown. Length, 5 mm.

Seven specimens; Colorado and Wyoming. The ones from Colorado were received from C. W. Johnson, to whom they are returned.

Symphoromyia flavipalpis, n. sp.

Female: General color ash gray; pile of front and vertex black, of occiput, cheeks and palpi white; first joint of antennæ moderately enlarged, brownish yellow, with short black hairs; second joint small, darker, third joint yellow, one and a half times as broad as the first joint, arista black; palpi and sides of epistoma yellow. Mesonotum with three indistinct brownish stripes, the central one abbreviated behind and divided longitudinally by a brownish yellow line, lateral or subdorsal stripes abbreviated in front, and divided at the suture; pile mixed white and black; pleuræ nearly bare, pile of scutellum black, halteres yellow. Abdomen brownish gray pollinose, pile white. Coxæ black, pile white, femora except extreme tip of a brownish cast; tip of femora, tibiæ and basal half of metatarsi yellowish; remainder of tarsi fuscous. Wings hyaline, veins dark brown, stigma yellow. Length, 6 mm.; wings, 6.25 mm.

Very close to *S. cinerea* Johns. On examination of two type specimens of *cinerea*, I noticed the palpi of the male to be black, and of the female to be black on the apical half. I wrote to Professor Johnson to examine the remaining type specimens, and he informs me that the tip of the palpi of these also are tinged with black. The third joint of the antennæ is broader, and the abdomen is slightly different in color.

One specimen, from Wasatch mountains, received from C. W. Johnson; another one from Colorado.

LEPTIS.

TABLE TO THE SPECIES.

1. Black, blackish, or fuscous..... 2
   Flavous, ochraceous, or pale testaceous..... 12
2. Wings distinctly ornamented..... 3
   Wings hyaline, gray or grayish subfuscous..... 5
3. Antennæ and palpi black..... 4
   Antennæ only partly black, palpi brownish, 8 mm.....*mystacea* Macq.
4. Abdomen pale at base.....*punctipennis* Say.
   Abdomen not pale at base.....*plumbea* Say.
5. Abdomen at least with second, third and posterior margin of fourth segments in part testaceous..... 6
   Abdomen with only the posterior margins of the segments testaceous, *incisa* Loew.
   Abdomen wholly black; grayish pruinose.....*pruinosa* Bigot.
   Abdomen with first segment blackish at base, second and third segments with a large sinuous black band at base, following segments black, bordered with brown.....*hoodiana* Bigot.
   Second and third segments with a broad yellow band at base, the posterior margins of which are deeply emarginate (Mexico)...*bitæniata* Bell.
6. Palpi black pilose..... 7
   Palpi white or yellowish white pilose..... 8
7. Palpi black in ground color.....*dimidiata* Loew.
   Palpi yellow in ground color.....*palpalis*, n. sp.
8. Coxæ black..... 9
   Coxæ yellow, or obscurely brownish yellow..... 10
9. First abdominal segment wholly black.....*maculifera* Bigot.
   First abdominal segment largely yellow.....*albibarbis* Bigot.
10. Mesonotum in certain lights subshining.....*pleuralis*, n. sp.
    Mesonotum opaque..... 11
11. Second and third segments wholly yellow except a black spot at base (female).....*albibarbis* Bigot.
    Second and third segments with only the posterior margin yellow (Mexico).....*politæniata* Bell.
12. Wings spotted.....*albicornis* Say.
    Wings not spotted or luteous on costal or posterior margin..... 13
13. Abdomen with a dorsal series of black spots, with bases of segments fasciate black..... 14
    Abdomen without such spots or fasciæ..... 17
14. First antennal joint of the female, first two of male, black, 7.1–7.8 mm, *scapularis* Loew.
    Antennæ otherwise colored..... 15
15. Antennæ dilute luteous..... 16
    Terminal joints only, of each sex, pale.....*vertebrata* Say.

16. Posterior tarsi brownish black, 10.7–13.5 mm.....*costata* Loew.
    First joint of hind tarsi brownish yellow, 7 mm.....*boscii* Macq.
    Entire tarsi dull ferruginous, 8–9 mm.....*intermedia* Walk.
17. Pile of abdomen long, black on dorsum, pale on sides.....*hirta* Loew.
    Pile not long, differently distributed..... 18
18. First joint of the antennæ black .....*terminalis* Loew.
    First joint of antennæ yellow.....*ochracea* Loew.

Some of the species in this table were given their position solely by reference to their descriptions; hence their true location might have been missed.

Leptis pleuralis, n. sp.

Female: Head black, grayish pollinose, pile yellowish white, antennæ brown, first joint yellowish, proboscis brownish yellow; mesonotum black, gray pollinose, viewed from behind subshining, except lateral margins and two subdorsal lines, short pile yellowish, longer ones more numerous and black; humeri and postalar callosities tinged with yellow; pleuræ variegated with brown and yellow, almost wholly devoid of pile; scutellum with a yellowish cast, brownish on top, halteres yellow; abdomen testaceous, a spot on the fourth segment, and fifth segment except narrow hind border, piceous, following segments opaque, pile mostly pale yellowish, a few black ones; coxæ and legs yellow, tip of tarsi brown, pile of coxæ whitish yellow, those of legs short, yellow and intermixed with black ones; wings hyaline, tinged with fuscous along anterior margin and base, stigma almost obsolete. Length, 7 mm.

One specimen; Washington. Close to *L. albibarbis* Bigot, but is smaller, thorax subshining, coxæ and legs less marked with fuscous.

Leptis albibarbis Bigot. Bull. Soc. Zool. de France, xii, p. 18.

A male specimen from Seattle, Wash., agrees with the female except that the coxæ, femora largely, and scutellum are black; the abdomen is yellow, a small spot on first, third, fourth and fifth segments, and sixth and seventh, except sides, black. A female specimen from the same source has the anterior coxæ largely, and the two posterior pair at base, black, the front femora with an indistinct, subapical band, and the hind pair with the distal half brown.

Leptis palpalis, n. sp.

Male: Head black, occiput, frontal triangle, face and cheeks gray pollinose and white pilose; proboscis and palpi yellow, pile of latter black; antennæ dark fuscous, tip of second joint, and third wholly, yellowish, arista black. Thorax black; mesonotum brownish pollinose, marked with a hair-like line in the middle, two subdorsal broader ones, and lateral margins gray pollinose, pile black; humeri testaceous, scutellum likewise, with base and pile black; pluræ gray pollinose, pile above front coxæ, and on metapleuræ white; halteres yellow. First, second, third and fourth abdominal segments, except in middle and on sides, yellow; remaining segments, except narrow posterior margins, black; pile black. Coxæ black, with white and black pile, trochanters black, femora, except poorly defined brownish ring in middle of the two anterior pair, and apical half of hind pair, yellow; four front tibiæ yellow, hind ones and all tarsi fuscous. Wings hyaline, with a subfuscous tinge, most prominent on anterior half and along veins; stigma elongate. Length, 10.5 mm.

One specimen; Washington.

Chrysops pachycera Will.

Numerous specimens of each sex from the Bill Williams Fork, Arizona, compared with the types convince me that the male and female specimens Doctor Williston had before him are, as he then suspected, and as Townsend later believed, of different species. Furthermore, it has been pointed out to me (thanks to Prof. Jas. S. Hine) that the male of Doctor Williston's types is the male of *C. proclivis* O. S. Therefore the name *pachycera* must stand for the females of that description, to which I will add the following notes: The shining black intervals on the mesonotum are, in perfect specimens, covered with pollen which causes an apparent darker ground color on these parts. The pollen on these stripes is very easily dislodged, however, and in a large series of specimens one will find a goodly number presenting these vittæ shining. The pollen of the scutellum is also easily rubbed off and leaves a shining ground color. The color of the female abdomen is variable. In some specimens the dark markings are very indistinct, especially on the first and second segments. In others

the general color is similar to that of the thorax, being darker only on the black markings. The male head agrees with that of the female. The mesonotum, except on sides which are whitish pollinose, is darker and with longer pile. The pleuræ are generally largely yellowish pollinose, but often with only a longitudinal stripe above base of coxæ. The coloration of the abdomen is not so variable as in the female, being yellow, with a prominent median double row of black spots, which are often broadly coalesced on the first, second and third segments, but do not reach the posterior margin. On the third, fourth, fifth and sixth segments are two lateral rows of black spots not attaining the posterior margin. Often all the spots on the last segment coalesce and the segment is black, except the very narrow lateral and posterior borders, and often the pollen is dislodged leaving the segment shining black. The wing agrees with the female wing, except the two basal cells are infuscated on their basal two-thirds. Halteres in each sex yellow.

Psilocephala occipitalis, n. sp.

Male: Occiput black, yellowish in the middle beneath, white pollinose, bristles small and yellowish, vertex yellowish pollinose, front white pollinose, except upper angles, which are yellowish, face white pollinose, antennæ yellow, first joint about twice the length of the second, third slightly longer than the first, its extreme tip and arista black, mouth-parts yellow, sparsely yellow pilose, cheeks yellow pollinose. Thorax yellow, mesnotum and dorsum of scutellum with a coating of yellow pollen, the very small yellow pile few in number, bristles yellow, four in number on the scutellum, pleuræ, under side of scutellum, and metanotum with a coating of white pollen, halteres yellow. Abdomen yellow, under side of first segment, apices of second and third white pollinose, sparse yellow pile scarcely perceptible, venter with first segment, apices of second, third and fourth narrowly white pollinose; legs and their pile yellow, bristles brownish yellow, coxæ white pollinose. Wings hyaline, with a faint fuscous tinge, fourth posterior cell open. Length, 7.9 mm.

One specimen; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow.

Psilocephala lateralis, n. sp.

Male: Head black, front shining, except the lower corners, which are white pollinose, face white pollinose, antennæ black, third joint with a faint reddish cast at base, first and second with black bristles, first and third subequal in length, third broader at middle than at ends, arista small and acute, mouth-parts black, pile of palpi white, at junction of face and cheeks is a deep black spot, bearing short black pile, cheeks and occiput white pollinose, the former with abundant white pile, bristles of latter black. Thorax black, dorsum of mesonotum and scutellum grayish brown pollinose, except broadly on sides, which are shining, pile yellowish white, bristles black, the latter four in number on the scutellum, pleuræ white pollinose and pilose, halteres lemon yellow. Abdomen black, shining, the first segment abundantly white pollinose, and pilose, likewise the apices of the second and third segments, viewed from in front, the dorsum of all segments solid sericeous, which is scarcely visible from rear view, venter with the first and tip of second and third segments white pollinose, all segments sparsely white pilose, tip of hypopygium with a yellowish cast. Legs black, pile white, bristles black, coxæ white pollinose, middle and hind tibiæ and tarsi reddish yellow. Wings with a yellowish brown tinge, darkest on the anterior half, the fourth posterior cell closed and short petiolate. Length, 7 mm.

One specimen; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow.

Thereva anomala, n. sp.

Male: Head and members black, front shining, in certain lights a sprinkling of white pollen can be detected along sides, face, cheeks, and occiput white pollinose, pile of vertex, front, face and mouth-parts black, of cheeks and occiput white, bristles of latter and of first joint of antennæ black, first and third joint of antennæ subequal in length, either about four times as long as the second. Thorax black, mesonotum gray pollinose, except broadly on sides which are shining, and with a mid-dorsal line velvety black, pile and bristles black, scutellum gray pollinose, with four black bristles and rather numerous black pile, plueræ with a thin coating of white pollen, pile white, a rather prominent tuft of white pile before base of halteres, lat-

ter black. Abdomen black, pile white, dorsum of second and following segments, when viewed from before, solid sericeous, scarcely perceptible from behind, hind border of second segment white pollinose, venter shining, except the narrow hind border of the second segment, pile white, tip of hypopygium yellowish. Coxæ and legs black, pile white, bristles black, front tibiæ anteriorly, middle and hind tibiæ posteriorly, yellow, and with coating of white pollen, base of middle and hind tarsi yellowish. Wings hyaline, with two brown cross-bands, one from stigma to apex of fourth posterior cell, the second from apex of second vein across submarginal cells to apex of first posterior cell.

The female resembles the male except the pile of front and face is not so thick, and the abdomen is not sericeous. Length, male, 9 mm., and female, 10.2 mm.

A specimen of each sex from Oak Creek canyon, Arizona. Collected by Dr. F. H. Snow. This species resembles certain forms of *Psilocephala*, but the pilosity of the face leaves no doubt of the generic position.

Scenopinus mirabilis, n. sp.

Female: Black, head and thorax subopaque, abdomen shining, with short white pile; first antennal joint slightly shorter than the second, closely applied to it, their separation difficult to see; third joint twice as long as the first two together, tapering somewhat from the middle apically; a small spot on humeri, and halteres yellow, abdomen broad and long, once and a half times as long as the wings, twice as long as the head and thorax together, knees and tarsi, except tips of latter, yellow; wings hyaline, veins dark brown, width of first posterior cell at margin of wing is scarcely equal to the length of the small cross-vein. Length, 4 mm.

One specimen; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow. Were it not for the open first posterior cell and short submarginal cell, this species would well be located in *Pseudotrichia*.

Scenopinus electa, n. sp.

Male: Black, with very short white pile; head and thorax subopaque, abdomen shining, hind margins of segments three, four and five white; lower half of eyes of smaller facets than

upper half; first and second joints of antennæ of equal length, third two and a half times as long as both together, in certain lights third is of a brownish color, palpi linear, yellow at tip, knob of halteres pure white, knees and basal half of tarsi yellowish, all tibiæ in certain lights brownish; wings hyaline, veins brown, width of apex of first posterior cell but little less than the length of the small cross-vein.

Female: Agrees with the male, except the palpi are very much enlarged at apex, clavate, tip brownish yellow, and none of the abdominal segments have white posterior borders. Length, 2.5 mm.

A specimen of each sex; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow.

Nausigaster scutellaris, n. sp.

Male: Black, whitish pollinose and punctulate as in *N. punctulata* Will., short pile of whole body white; occiput, vertex, front, face except tip of tubercle, white pollinose, the lower half of the face reddish brown, mouth-parts retracted, brownish, antennæ yellow, base of arista brownish yellow. Dorsum of thorax with five subshining, bare, longitudinal vittæ, which in certain lights are bronze, the central one is straight, the two lateral ones converge and join posteriorly; pleuræ uniformly pollinose and punctulate; scutellum subshining, red, except extreme lateral angles and minute tubercles on posterior margin, which are black; halteres yellowish white. Venter and apex of abdomen with a reddish cast, dorsum with five broad, indistinctly defined, subshining vittæ, which in certain lights are bronze, the small concave space on base of second segment whitish pollinose, the pollen on either side of the median vittæ arranged in crescentric spots, with the concavity toward the median line, the fourth segment possessing two pairs of such spots. Legs black, extreme apex of femora, tibiæ and tarsi yellowish, a subapical band on hind tibiæ, and hind metatarsi brown, claws black. Wings hyaline, with a very minute brown spot at apex of auxiliary vein, spurious vein scarcely perceptible beyond the small cross-vein, first posterior cell closed a very short distance from the wing margin, last section of fourth vein without stump on anterior side,

but a very short one at angle on posterior side, the fifth vein is continued as a short stump beyond the posterior cross-vein. Length, 6 mm.

Two specimens; Congress Junction, Ariz. Collected by Dr. F. H. Snow.

Nausigaster geminata Towns.

A female specimen from Oak Creek canyon, Arizona, agrees with Townsend's description, except the spurious vein is narrowly bordered with brown, there is a small spot on apex of third vein, the third vein emits a stump on posterior side a little before the middle of the first posterior cell, the last section of the fourth vein has a stump on posterior side at first angle and one on anterior side at second angle, fifth vein is continued as a stump beyond the hind cross-vein.

Nausigaster punctulata Will.

A male specimen from Oak Creek canyon, Arizona, agrees with the description of this species, except the last section of the fourth vein emits a stump near its middle on the anterior side, the fifth vein is slightly infuscated just beyond the posterior basal cross-vein.

Sphyximorpha snowi, n. sp.

Female: Head yellow, the front from just above the ocelli to about half-way to antennæ, a broad stripe on cheeks, a narrow line from base of antennal process to mouth, and antennal process light reddish yellow; antennæ fuscous, the third joint, except on inner sides at base, black; mouth-parts fuscous; occiput at the middle on the sides blackish, covered with whitish pollen; pile of occiput and vertex white. Thorax red; humeri, a spot on outer end of suture, a superalar stripe, a large spot on mesopleuræ extending onto the sternopleuræ, and pteropleuræ, scutellum and halteres yellow. Abdomen reddish, very little constricted at base, the first segment with a large yellow triangle on each anterior angle which reaches to the posterior border, the subtriangular space on dorsum is largely black; the three following segments with a broad posterior yellow border, the last one of the three being a little over one-half the length of the segment in width. Legs reddish yellow, base of

all tibiæ a shade lighter. Wings hyaline, fuscous on anterior part, which color follows the spurious vein almost to the cross-vein, thence it borders the third vein posteriorly to the tip, a subhyaline space in each of the marginal and submarginal cells, the third vein bent deeply into the first posterior cell, and at this point bearing a stump posteriorly. Length, 12 mm.

Two specimens; Bill Williams Fork, Arizona. Dedicated to Dr. F. H. Snow, whose untiring energy results in so many good things.

Conops gracilis Will.

Specimens from Bill Williams Fork, Arizona, agree with this species, except the cheeks are generally blackish or red in color. This color varies in extent and is often resolved into numerous small dots. The attenuated portion of the antennal style is longer than in the type. The female differs from the male only in size, being larger, and the abdomen is more extensively pollinose.

Tetanocera inopa, n. sp.

Male: Head yellowish, occiput grayish pollinose, with a black spot in center, above which, in certain lights, shows a short whitish pruinose stripe on each side; front opaque, viewed from behind shows a very narrow silvery stripe along the eyes, a median longitudinal shining stripe passing over the black ocellar tubercle, is excavated in front of it, and attains the anterior margin, where it is tinged with brown, a black spot on each side of the antennæ, two more back of these, bearing the two lowest orbital bristles; antennæ testaceous, second joint shining, with bristly hairs above and below, slightly infuscated on upper side, third joint opaque, about equal to second in length, slightly excavated above, arista yellow and with white plumosity; face and cheeks immaculate, yellow, in certain lights whitish, mouth-parts yellow. Thorax testaceous; mesnotum grayish pollinose, bearing two subdorsal and two sublateral brown stripes; scutellum fuscous in center above, grayish pollinose on sides, with four bristles; pleuræ subshining; halteres yellow, knobs slightly infuscated. Abdomen brownish yellow, dark brown on dorsum, posterior borders of segments lighter, hypopygium sordid yellow. Legs yellow, last three

joints of fore tarsi and last two of both intermediate and hind tarsi blackish. The interrupted brown border of the wings does not reach the third longitudinal vein, the remainder of the wing very indistinctly reticulated, the hyaline spots arrange themselves on each side of the veins and leaves a very narrow brown band in the center of the interval. Length, 4.5 mm.

One specimen; Washington.

ICTERICA.

TABLE TO THE SPECIES.

1. The brown border at apex of wing contains a hyaline streak following the margin from just beyond the tip of second vein to just before tip of fourth vein.....*fasciata*, n. sp.
   The brown border not interrupted at this point..... 2
2. Two large brown spots completely surrounding the cross-veins, *lichtensteinii* Wied.
   Brown near cross-veins dissolved into smaller reticulations 3
3. The recticulations in the center of wing consist of small angular spots, arranged in double rows between the veins.....*seriata* Loew.
   The reticulations consist of small brown ringlets, either open or closed, *circinata* Loew.

Icterica fasciata, n. sp.

Male and female: Head and members yellow, arista, except extreme base, and bristles of front brownish. Thorax yellow, covered with yellow pollen and pile, bristles of mesonotum and scutellum yellowish brown, the latter four in number, halteres yellow. Abdomen yellow, shining, with yellow pile and pollen, ovipositor shining, its tip black. Legs, their bristles and pile, yellow. Wings brownish yellow reticulated, the reticulations, as in *I. circinata* Loew, consist of brownish ringlets, some open and some closed, but near the center of the wing the ringlets are of bolder face and of a darker shade of brown, causing a distinct band, arising at stigma and passing over both cross-veins to posterior border of wing, it is slightly concave, the concavity toward the base of wing, the costal border before stigma is yellow except for two indistinct brownish spots, and then for two-thirds the distance to tip of second vein is yellow, except for one small spot, the last third of this distance, or just before second vein, is brown save for two, sometimes three, small yellow spots, the first of which attains the costa, from tip of second vein there is a continuous brown band bordering

the wing around to the third posterior cell, and containing a small yellow dot just after tip of second vein, a narrow hyaline streak along apex of wing, three hyaline spots on border of wing in second posterior cell, and three in third posterior cell, from here to anal angle the wing border consists of an alternation of indistinct brown and hyaline spots; otherwise the wing resembles very much that of *I. circinata* Loew. Length, 4.5 mm.

Numerous specimens; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow.

URELLIA.

TABLE TO THE SPECIES.

1. Scutellum with two bristles 2
   Scutellum with four bristles 11
2. Basal half of wing with faded, but regular, reticulations, which consist principally of short, parallel streaks crossing the cells ..... *flava*, n. sp.
   Basal half not so marked 3
3. The rays on anterior side of large wing spot fused ..... *conjuncta*, n. sp.
   These rays not fused 4
4. The Y-shaped mark at apex of wing absent or imperfect 5
   The Y-shaped mark present 7
5. The anterior branch of the Y-shaped mark present ..... *nigricornis* Coq.
   The anterior branch absent or represented by a dot 6
6. Middle femora without bristles ..... *imperfecta* Coq.
   Middle femora with four or five bristles below ..... *femoralis* Thom. *radifera* Coq.
7. Small cross-vein surrounded by the brown color 8
   Small cross-vein partly or wholly surrounded by hyaline 10
8. Fifth vein with a grayish brown spot or streak 9
   Fifth vein without any marking ..... *bisetosa* Coq.
9. Two rays in apex of discal cell ..... *occidentalis*, n. sp.
   Only one ray in apex of discal cell ..... *vicina* Wulp.
10. Fifth ray with a small dot near center of discal cell ..... *actinobola* Loew.
    Fifth ray without such dot ..... *mevarna* Walk.
11. Basal half of wing with regular reticulations of short parallel streaks across the cells ..... *abstersa* Loew.
    Basal half not so marked 12
12. Apex of discal cell with one ray ..... *eugenia* Wulp.
    Apex of discal cell with more than one ray 13
13. Third posterior cell wholly hyaline ..... *polyclona* Loew
    Third posterior cell with markings 14
14. Third vein with bristles ..... *aldrichii* Doane.
    Third vein without bristles 15
15. Third posterior cell with three rays ..... *pacifica* Doane.
    Third posterior cell with two rays ..... *stigmatica* Coq.

Of some of the synonymy given by Mr. Coquillett in this group I am not prepared to approve or disapprove. Some of the species removed by him from this genus, however, I believe belong more properly to it than to any other.

Urellia flava, n. sp.

Female: Body wholly covered with yellow pollen; head and members yellow, arista and frontal bristles black, those of the occiput yellow. Thorax yellow, the mesonotum appears through the pollen to be black in ground color, metanotum likewise black, short pile yellow, bristles of mesonotum and scutellum black, latter two in number, halteres yellow. Abdomen yellow, the last two segments appear through the pollen to be blackish, ovipositor subshining yellow, tip black, pile yellow. Legs wholly yellow, with yellow bristles and pile. Wings very much like those of *U. abstersa* Loew, but the reticulations on proximal half are yellowish and become uniformly fused along the first ray from the subapical spot, the anterior branch of the Y-shaped mark at tip of wing is not connected with the ray preceding it, between the Y-shaped mark and the third vein is a deep black spot which on transmitted light is opaque and stands out from the surrounding less dark color, the same color exists in the tip of the small ray ending at the apex of the second vein, also in the apex of the short but broader ray preceding; otherwise the wing is as in *U. abstersa* Loew. Length, 3 mm.

One specimen; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow.

Urellia conjuncta, n. sp.

Female: Head and members yellow, arista and frontal bristles brownish black, those of the occiput yellow. Thorax black, gray pollinose, humeri, a spot before base of wing, pile and halteres yellow, bristles of mesonotum and scutellum black, the latter two in number. Abdomen black, gray pollinose, subshining, pile yellow, ovipositor shining black, with a few yellow pile at base. Legs yellow. The large spot on the wing has all the rays in front of the fourth vein fused, emitting only five rays on posterior side of this vein, the spot reaches along the costa to a point half-way between a point opposite the small cross-vein and tip of first vein, at which place it possesses a small hyaline dot, in base of first posterior cell is a hyaline spot

nearly as long as the width of the cell, another smaller one nearly over the hind cross-vein, besides the two subparallel rays in second posterior cell the large spot projects beyond the fourth vein, forming an irregular border to it, the hind cross-vein possesses one of the rays and the discal cell has two short rays near the apex, one arising under the small cross-vein and the other midway between the two cross-veins, there is a small dot on fifth vein near middle of discal cell, beginning at the small cross-vein and running to the stigma is a subfuscous tinge which proceeds proximad, filling the base of the marginal and submarginal cells, both basal cells, and the basal half of the discal cell. Length, 3.8 mm.

One specimen; Bill Williams Fork, Arizona. Collected by Dr. F. H. Snow. This species may require a new genus, yet I consider it nothing but an *Urellia* with all the anterior rays of the wing spot fused.

Urellia occidentalis, n. sp.

Male and female: Head and members yellow, upper part of front and occiput brownish, arista and frontal bristles black, those of the occiput yellow. Thorax black, gray pollinose, short pile, humeri, and spot before base of wings yellow, bristles of mesonotum and scutellum black, the latter two in number, halteres yellow. Abdomen black, gray pollinose, pile yellow, ovipositor shining, a few pile at base. Legs reddish yellow, pile and bristles yellow. Wings hyaline, the first ray of the subapical spot passes to stigma and is about as wide as the first posterior cell, its base surrounds the small cross-vein, on each side of which, near the fourth vein, is sometimes a very small hyaline dot, second ray arises half-way between the second and third veins, opposite the posterior cross-vein, and ends in costa opposite the mid-point between the two cross-veins, a hyaline spot at apex of second vein, no ray before the Y-shaped mark, base of latter one-third as wide as the first posterior cell, on under side of subapical spot are five subparallel rays, the middle, or third one, is on the hind cross-vein, the last two cross the discal cell to the fifth vein, then the last one borders the fifth vein to the base of discal cell, in the first

posterior cell, and nearly above the hind cross-vein, is a rather large hyaline spot. Length, male, 3.5 mm., and female, 4 mm.

Six specimens; Palo Alto, Cal., and Lance creek, Wyoming.

Elachiptera bilineata, n. sp.

Female: Head yellow; frontal triangle, occiput, except on the lower part, tip of third antennal joint, and arista black; pile yellow. Thorax shining black, pile yellow; mesonotum sparsely punctured, two subdorsal rows of grayish yellow, microscopic hairs, the rows widen caudad and almost meet in front of the scutellum; scutellum black, coarsely punctured, apical tubercles small; halteres light yellow. Abdomen shining black, pile yellow. Coxæ and legs yellow, anterior tibiæ and all tarsi brownish. Wings hyaline, veins at base of wing yellowish, on remaining part brownish, third and fourth veins beyond discal cell parallel, hind cross-vein more than its length from the small cross-vein. Length, 2.7 mm.

One specimen; Oak Creek canyon, Arizona. Collected by Dr. F. H. Snow.

Hippelates splendens, n. sp.

Female: Head black; narrow anterior border of front, face, antennæ except apex, and palpi yellow; frontal triangle shining. Thorax shining black; mesonotum and scutellum sparsely punctured, each puncture bearing a short whitish hair, scutellum also with an apical pair of bristles; halteres yellow. Abdomen black; venter yellowish basally, pile yellowish. Coxæ black, femora except apex, concolorous, tibiæ and tarsi yellow. Wings hyaline, veins yellowish brown. Length, 2.2 mm.

One specimen; Lusk, Wyo. Collected by Hugo Kahl.

LIMOSINA.

TABLE TO THE SPECIES.

1. Third section of costal vein longer than the second..... 2
   Third section of the costal vein shorter or equal to the second..... 6
2. Distal section of second vein longer than the first section of the third... 3
   Distal section of second vein not longer than the first section of the third.....*lugubris* Will.
3. Last section of third vein with a decided curvature forward, ending a considerable distance before apex of wing.....*perparva* Will.
   Third vein without such curvature, ending near apex of wing..... 4
4. Wings wholly hyaline.....*exigua*, n. sp.
   Wings at least somewhat infuscated on anterior portion..... 5
5. Front shining.....*occidentalis*, n. sp.
   Front largely opaque.....*sordipes*, n. sp.
6. Scutellum deep opaque black, noticeably different from the mesonotum, *scutellaris* Will.
   Scutellum not noticeablly different from the mesonotum..... 7
7. Third vein nearly straight, ending at tip of wing..... 8
   Third vein curving forward, ending before apex of wing..... 9
8. Scutellum shining.....*æqualis* Grimshaw.
   Scutellum opaque.....*pumila* Will.
9. Scutellum with reddish margin.....*dolorosa* Will.
   Scutellum not so marked..... 10
10. Front marked with red..... 11
    Front not marked with red..... 12
11. Front also with small silvery spots.. .....*venalicia* O. S.
    Front without such spots.....*illota* Will.
12. Entirely black..... .....*atra* Adams.
    Not entirely black..... 13
13. Cheeks and mouth-parts largely yellow.....*setigera* Adams.
    Cheeks and mouth-parts black..... 14
14. Scutellum with eight bristles.....*fontinalis* Fall.
    Scutellum with six bristles.....*aldrichi* Will.

Limosina exigua, n. sp.

Male and female: Front opaque black, with median line shining, occiput black, shining, face, cheeks and mouth-parts dull light colored; antennæ black, arista pubescent. Thorax black, shining, pleuræ with a brownish cast, halteres white. Abdomen black, shining, venter brownish. Wings hyaline, third section of costa longer than second, first section with a few long bristly hairs, last section of second vein longer than the first section of the third, joining the costa nearly opposite

the apex of discal cell, distal portion of third vein nearly straight, ending slightly before apex of wing. Length, .8–.9 mm.

Numerous specimens; Las Cruces, N. M.

Limosina occidentalis, n. sp.

Male: Head shining, vertex and lower part of face black, remainder with a brownish cast, antennæ dark brown, second joint with a coronet of strong bristles, arista pubescent. Thorax shining dark brown, pleuræ obscurely marked with yellow, halteres whitish. Abdomen brownish black, apex black, shining. Coxæ and legs brownish yellow, shining, tarsi yellow. Wings hyaline, anterior portion, except a triangular space beyond apex of second longitudinal vein, and narrowly along fifth vein, infuscated, third section of costa longer than second, distal section of second vein longer than first section of third, joining costa slightly beyond the apex of discal cell, third vein straight, ending near apex of wing. Length, 1.75 mm.

One specimen; Palo Alto, Cal. Collected by R. W. Doane.

Limosina sordipes, n. sp.

Male and female: Front opaque black, occiput, vertex, face and cheeks shining black, mouth-parts and antennæ black, arista pubescent. Thorax black, mesonotum and scutellum subopaque black, pleuræ obscurely marked with yellow, knobs of halteres brownish. Abdomen shining brownish black, posterior margins narrowly light brown. Coxæ and legs brownish, tarsi yellowish. Wings hyaline, subfuscous on anterior portion, most marked on second and third longitudinal veins, third section of costa longer than second, distal section of second vein longer than the first section of third vein, joining costa slightly beyond apex of discal cell, third vein nearly straight, ending slightly before apex of wing. Length, 1–1.4 mm.

Numerous specimens; Brookings, S. Dak.